

Introduction to Georgia Tech

President G. Wayne Clough

Wal-Mart President's Roundtable

October 4, 2006



Georgia Tech: Recognized for excellence

- Among top 10 public universities in the nation.
- Among top 5 engineering schools in the nation.
- Nationally ranked for computing, architecture, management, and selected science and liberal arts programs.
- Caliber of incoming students among nation's top 5 public universities.

Georgia Tech vision and mission

Georgia Tech will define the technological research university of the 21st century and educate the leaders of a technologically driven world.



Five campuses on three continents



Georgia Tech Atlanta



Georgia
Tech
Lorraine



Georgia Tech
Savannah



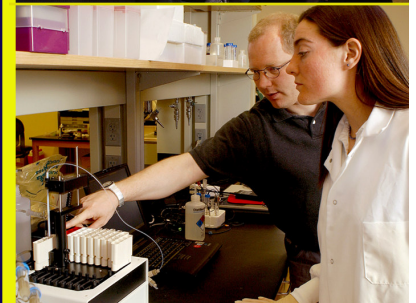
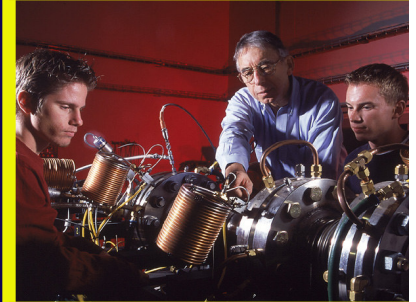
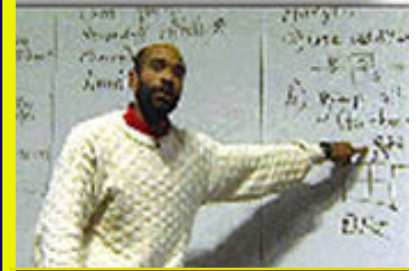
Georgia Tech Ireland

Georgia Tech
Singapore



Faculty

- 962 academic faculty
- 961 research faculty
- 208 post-doctoral fellows
- 117 endowed chairs and professorships
- 30 National Academy members
- 109 NSF CAREER Awards (2nd highest in the nation)
- 7 PECASE Awards (among top 10)



Students

17,933 students enrolled:

- 12,357 under-graduates
- 5,576 graduate students
- Growing enrollment: added 4,150 students in the past 10 years.

A national leader in graduating minority engineers

*Minority Issues in Higher Education
Hispanic Business*



Reinventing undergraduate education

- Enriched admissions process
- Study abroad: 34%
- Research: 43%
- Music: 10% at any given time
- Leadership: new certificate program
- Diversity



A quality campus

4 million gross sq ft of
new, renovated space



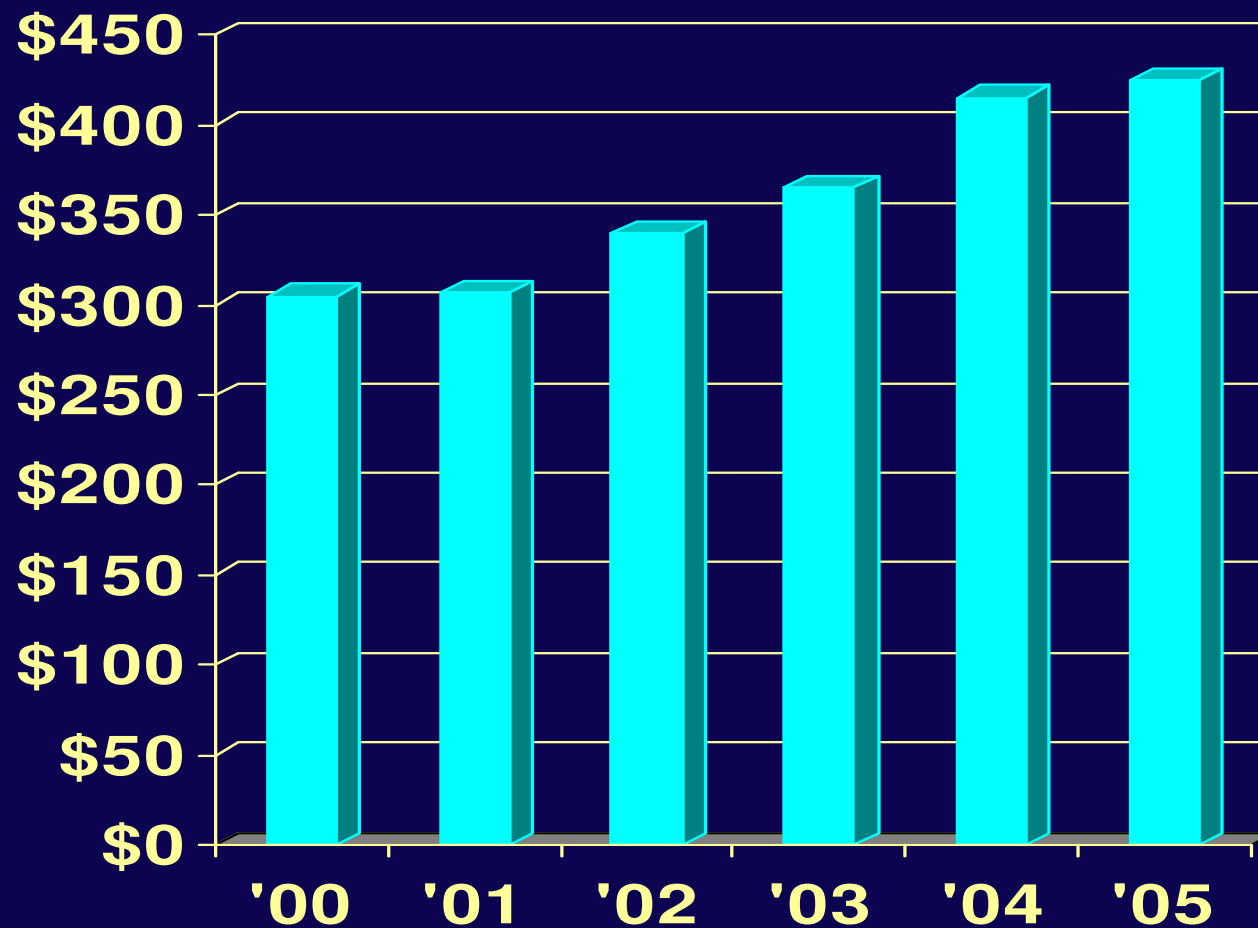
Marcus Nanotechnology Building

- Largest in the South
- Three classes of cleanrooms (10, 100, 1,000)
- First in nation, world designed for both physical, biomedical research
- Flexible configuration
- Multi-user access
- Interdisciplinary



Annual research expenditures

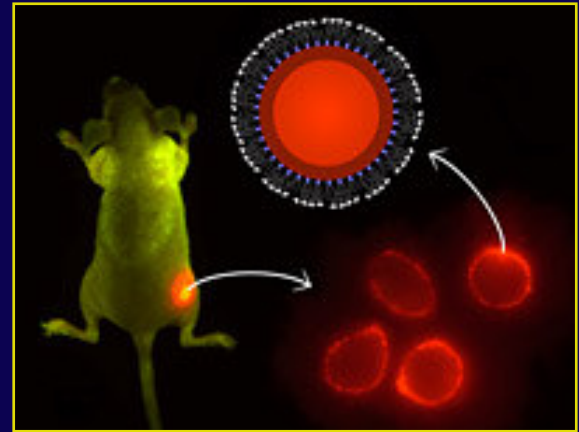
(in millions)



At the leading edge

- Research expenditures doubled during past decade
- Georgia Tech ranks second in the nation in engineering R&D
- One of 7 National Centers of Cancer Nanotechnology Excellence (\$20 million)
- Recently attracted Jeff Skolnik, world-renowned computational biologist, and team of 20 to Institute for Systems Biology

Identifying and attacking individual cancer cells.

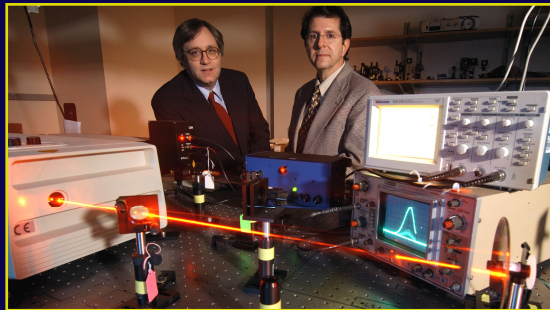


“The Razor” at the Institute for Systems Biology is the world’s 41st fastest computer.

18 National Centers of Excellence



- Microelectronics Packaging Research Center
- Center for Organic Photonics & Electronics
- Center for the Engineering of Living Tissues
- Mid-America Earthquake Center
- Center for Environmentally Responsible Solvents and Processes



Growing research thrusts



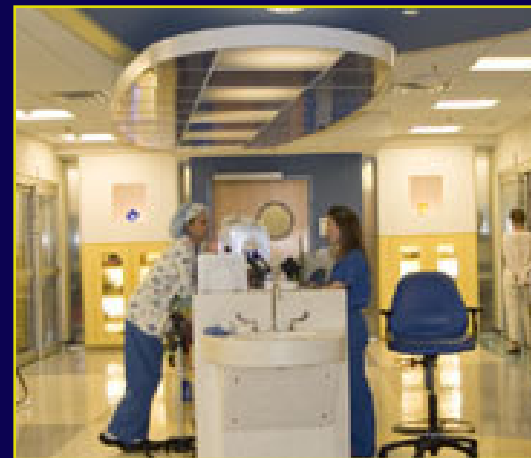
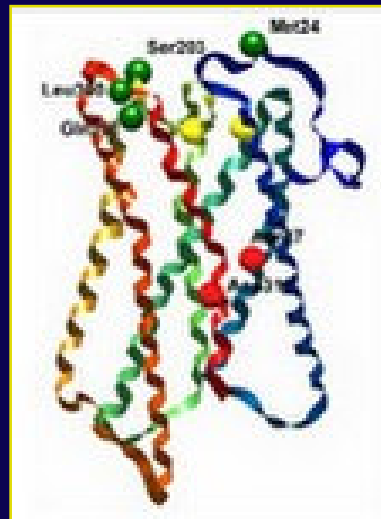
Energy



Predictive medicine



Systems biology



Electronic health systems

Growing research thrusts



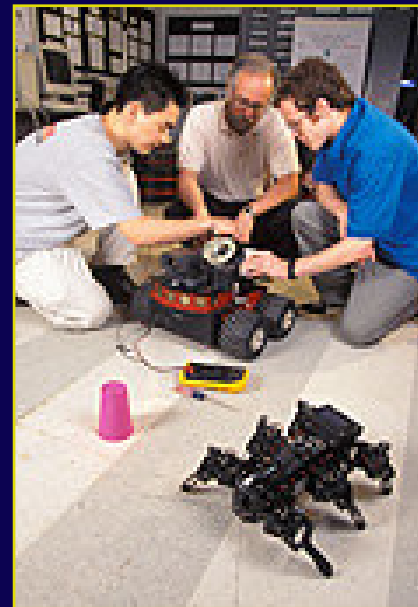
Disasters, water



High performance computing



Music technology



Robotics

Expanding economic impact

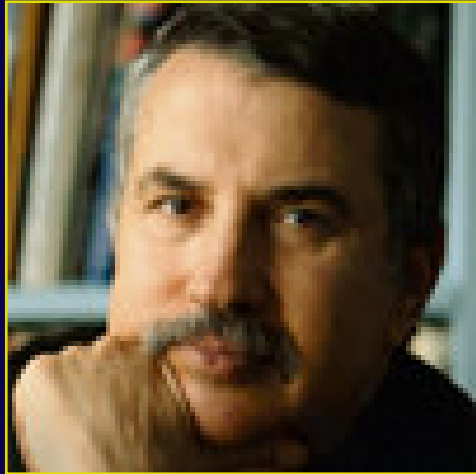
- From 1995 to 2005, Georgia Tech spun off 76 new companies.
- In 2005, Tech was awarded 43 patents, 9th among research universities nationwide.



Advanced Technology Development Center



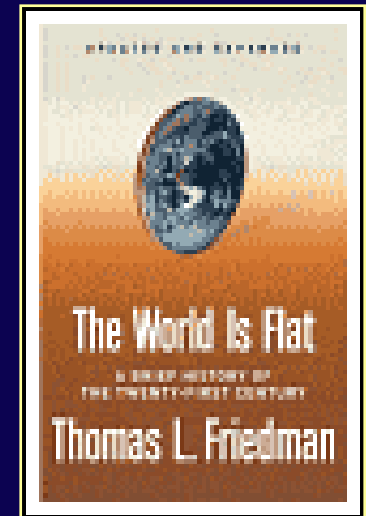
Technology Enterprise Park



Tech has the “right stuff”

“What the Georgia Tech model recognizes is that the world is increasingly going to be operating off of the flat-world platform, with its tools for all kinds of horizontal collaboration.”

Thomas L. Friedman
The World Is Flat



Sustainability is a culture at Georgia Tech



The Institute for Sustainable Technology and Development is an advocate for sustainability in the curriculum, research, and management of campus operations.



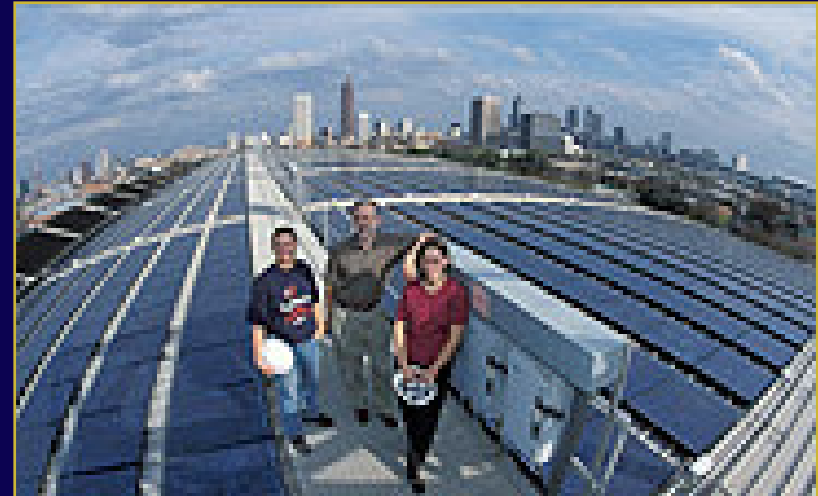
Permeating the educational experience with sustainability

- More than 100 courses have a sustainability perspective built in.
- Special student projects:
 - ▷ Constructing an 800-square-foot solar home for an international competition
 - ▷ FUTURE (FURthering Technology's Unity and Relationship with the Environment) coordinates student sustainability activities



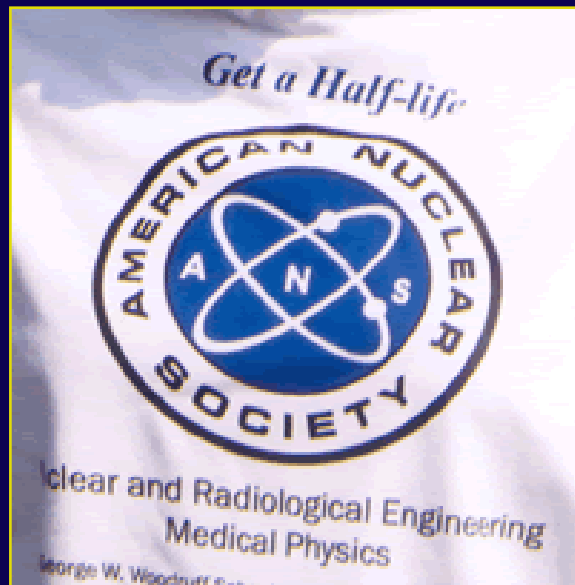
Solar energy

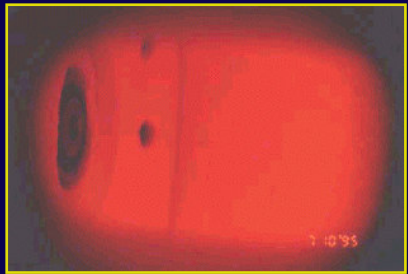
University Center of
Excellence in Photovoltaics
Research and Education



Nuclear energy

- Nuclear fusion as future power source
- New materials for rigors of producing nuclear energy, shielding radiation sources





Combustion Laboratory

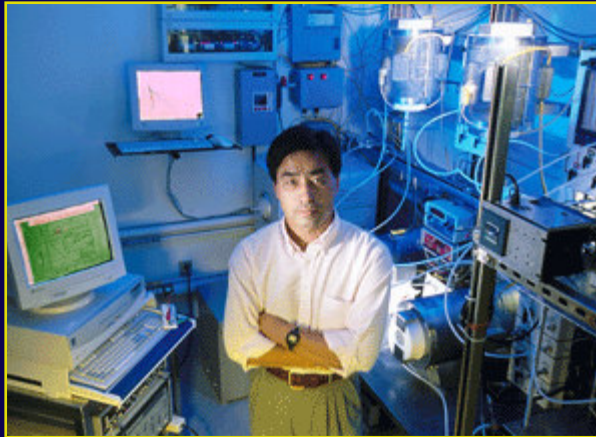
- Flameless combustion
- Increasing efficiency and productivity, lowering emissions
- Leader of NASA university research consortium on combustion

NEETRAC: National Electric Energy Testing Research and Applications Center

- Leading edge R&D; state-of-the-art testing
- Developing standards
- Technology transfer
- High-level education programs



Fuel cell and battery technologies



- Low-emission vehicles
- Wireless telecommunications
- Distributed stationary power supplies

Center for Organic Photonics and Electronics

- National Center of Excellence
- Develops new materials
- Manipulates photons in light in ways similar to electrons



Strategic Energy Initiative

- Energy technology development, assessment, demonstrations
- Policy guidance based on scientific facts, engineering principles, and economic realities
- Southern Pine to Ethanol initiative
- \$12 million partnership with Chevron: biofuels and hydrogen



Linkage to industry

Sustainability and Solid State Lighting for Walmart

Ian Ferguson and Nola Li

Georgia Institute of Technology

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Sustainability in lighting for Walmart
Slide [1]



Reducing waste

Presidential
Green
Chemistry
Challenge
Award



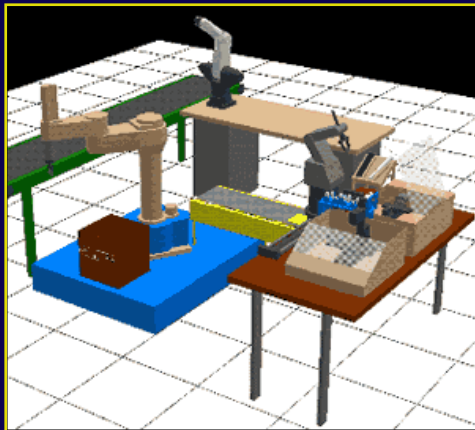
National Center of Excellence
for Environmentally Responsible
Solvents and Processes

- Solvents that are reusable or can be reconfigured to do multiple steps in a process
- Nanoparticles that allow multiple reactions in the same vessel



- “Closed loop” manufacturing to recover and reuse product components
- Recycling carpet and textile wastes
- Campus-wide recycling of paper, glass, plastic, aluminum

Industrial and systems engineering



- Georgia Tech has ranked first in the U.S. for 16 straight years
- The Logistics Institute in Atlanta
The Logistics Institute – Asia Pacific in Singapore
- Transportation research: efficiency, logistics, security
- Keck Virtual Factory Lab: modeling integrated factory systems to increase efficiency

Global water needs

Mapping
water
lines in
Honduras



Managing
the Nile
River



Building
solar-
powered
latrines in
Bolivia



Improving
water quality
in Angola

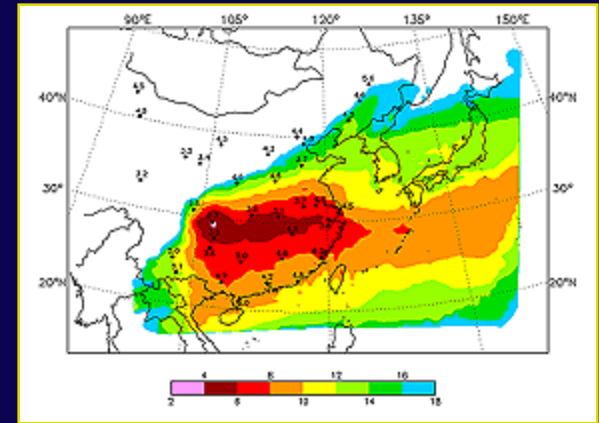


Improving air quality

Studying the effects of haze on food production



Gathering data to develop forecasting models for “air sheds”



The Georgia Tech Air Resources Engineering Center coordinates research; provides outreach, information and technology transfer.



Research in the Antarctic

Planning smart growth



Professor Adjo
Amekudzi: *Georgia
Guidebook to
Pedestrian Planning*



SMARTAQ:
Studying how
urban growth
patterns affect
quality of life



Planning for sustainable growth in Ecuador



Students win
international
sustainable
design
competition to
revitalize historic
downtown Dubai

Operating a sustainable campus

LEED Silver criteria form the construction standard



Natural
gas
powered
trolleys



White roofs reflect summer heat



Rooftop drainage systems
capture rainwater for irrigation



The Eco-Commons

